

NEW MEXICO INTERSTATE STREAM COMMISSION

MEMORANDUM

June 10, 2013

TO: Gary Stansifer, OSE Middle Rio Grande Water Master

FROM: Doug Crosby, OSE

Through: Nabil Shafike, ISC

SUBJECT: Albuquerque Bernalillo County Water Utility Authority (ABCWUA)

Pumping Impact for Calendar Year 2012 (OSE File No. RG-960)

The Middle Rio Grande Administrative Area Model (2000) was used to simulate the impact of ABCWUA well withdrawals during the calendar year 2012. Model results for two model runs, one with the ABCWUA pumping and the other without the ABCWUA pumping were used to estimate the impact on the surface water of the middle valley including the Rio Grande, Rio Jemez and drains. During 2012 ABCWUA reported a total withdrawal of 55,592 af and the resulting impact on the surface water was estimated to be 65,444 af.

Model Set-up

The model is set up to run a steady-state stress period, followed by transient stress periods, which run the model through 2012. From 1994 onward, the simulated stress period is 1 year, with 10 uniform time steps (36.5 days).

Two simulations were completed for the analysis: 1) a baseline run using a version of the well file that does not include any ABCWUA wells; and 2) a run that uses the well file includes all reported ABCWUA well withdrawals through 2012. No other changes to the model were made, thus isolating the changes resulting from ABCWUA well withdrawals. The MODFLOW file manipulated was the well file. This file was updated to include the diversion rates for the ABCWUA wells for the year 2012. Well files were updated using diversion data provided by the ABCWUA (Andrew Lieuwen, via e-mail) monthly reports and annual summary of diversions for Water System and Non-Water System wells submitted to the OSE Water Rights Division (WRD). These reports include wastewater returns to the Rio Grande.

Post-Processing

The river depletions were determined by comparing the water budgets from the two simulations. This comparison was completed using the “MASSUMLL.EXE” code created by P. Barroll. The code separates out the effects of pumping on the Rio Grande, drains and the Rio Jemez.

Simulated results

Table below illustrates total withdrawals, reported return flow and computed stream depletions for the period from 2000 to 2012. The results indicate that the annual stream depletions for 2012 were 65,444.10 af. This value represents a decrease of about 0.37 percent over 2011 stream depletions. It should be noted that during 2012 ABCWUA reduced its groundwater withdrawals by approximately 2.7 percent compared to its 2011 withdrawals.

YEAR	TOTAL ANNUAL WELL DIVERSIONS (AFY)	TOTAL ANNUAL STREAM DEPLETION (AFY)
2000	115,079.50	71,797.10
2001	110,957.60	72,946.40
2002	107,894.10	73,878.30
2003	108,016.10	74,250.70
2004	101,538.40	72,920.60
2005	102,543.70	74,600.60
2006	99,806.50	74,735.30
2007	98,560.10	74,598.60
2008	101,312.50	73,711.60
2009	78,848.20	71,062.90
2010	59,478.30	67,755.20
2011	57,152.40	65,686.20
2012	55,592.65	65,444.10

References

Barroll, P., 2001. Documentation of the Administrative Groundwater Model for the Middle Rio Grande Basin. Office of the State Engineer Technical Services Unit Hydrology Bureau Report 99-3.